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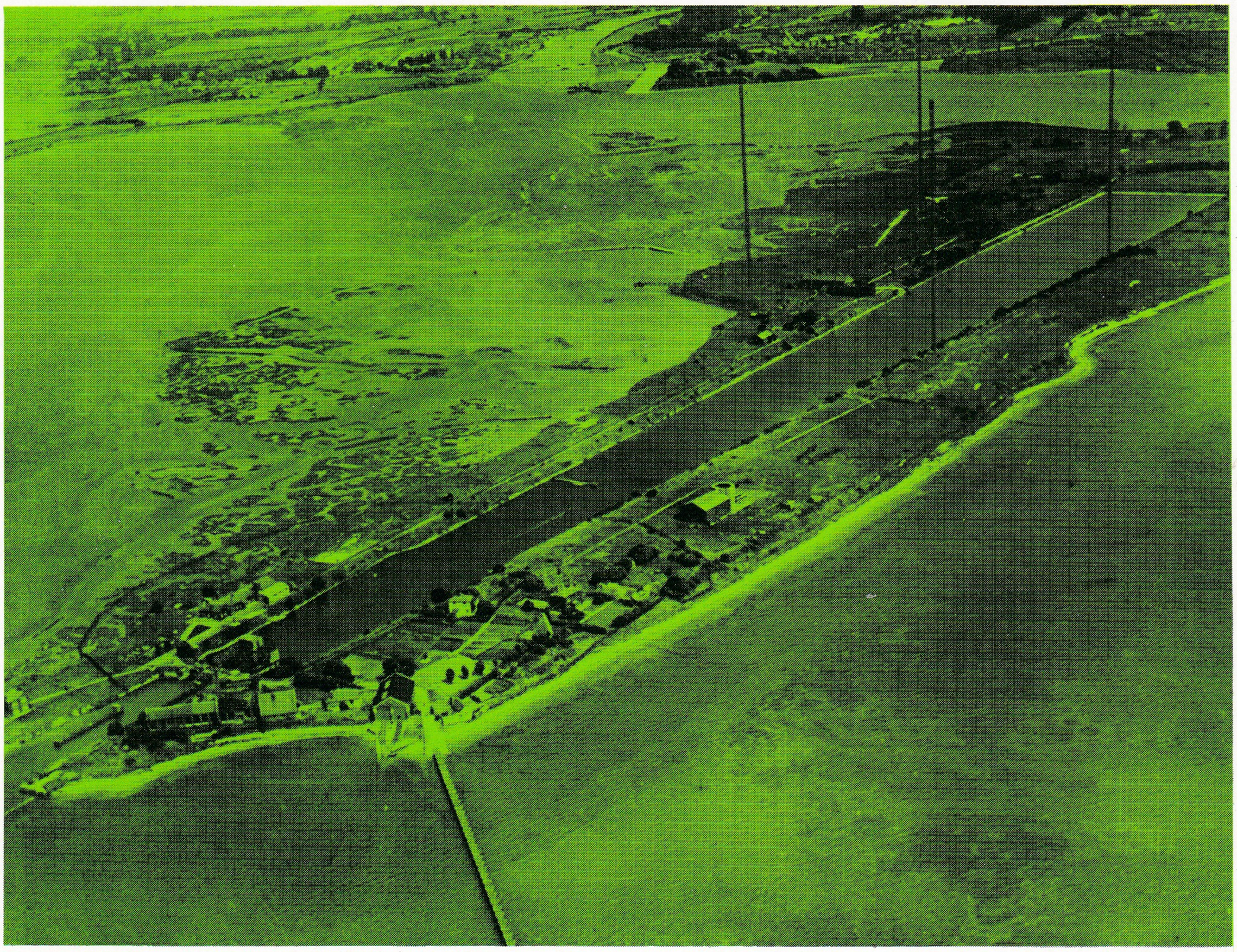
Horsea Island and The Royal Navy



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Cover:
Horsea Island from the air in 1932
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HORSEA ISLAND AND THE ROYAL NAVY

Basil Ripley, BEM, ISM

Horsea Island is no longer an island. The Portsmouth Harbour reclamation scheme, begun in 1970, included the filling of about 160 acres of mudland which had separated it from the mainland. This development, which facilitated the construction of the M27 motorway, was the second transformation of recent times. The first was begun in 1885 when the Admiralty took over Horsea, converting it from two islands into one, and from agricultural land to a naval research establishment. This account is concentrated on the period during which Horsea was in use as an experimental establishment known locally as 'Hush Hush Island'.

Before the Admiralty took over, the two islands in the north east corner of Portsmouth Harbour, were devoted to agriculture. The larger island, Great Horsea, was to the east of the smaller Little Horsea. It has been suggested that during their occupation of Portchester Castle the Romans may have used Little Horsea for agriculture, salt production, or both. During the transformation of the islands in the late 1880's, and again in 1898 at the time of the construction of a pier on the western corner, archaeological studies were made. It was concluded that a 'wadeway' existed between Little Horsea and Portchester, and that its form of construction indicated a Roman origin.[1] For the medieval period, documentary evidence has survived in the form of two parchment manuscripts in the possession of the Oglander family of Nunwell Park in the Isle of Wight. One refers to the manumission of a serf on West Horsea about 1250. The other, dated 11 June 1310, is a bequest by Gwydo de Horsy which includes 'to Margery, my daughter, all my land of West Horsy with all its appurtenances wheresoever they be'.[2]

The islands are shown clearly on Fabvollière's map of c1655.[3] Conveyances held in the Portsmouth City Records Office provide much information about the tenant farmers on the two islands in the 17th and 18th centuries.[4]

On previous page:
Horsea Island in 1973 looking NW
Portsmouth City Engineers Department

Great and Little Horsea Islands in 1870
Portsmouth City Library

In 1776 the magazine for naval and military forces based at Portsmouth was sited close to the High Street where some 10 to 12,000 barrels of powder were stored. Many prominent officials were concerned at the danger to the town in the event of accidental or deliberate explosion. In the following words a petition was sent to the King 'The Humble Petition of the Mayor, Aldermen, Burgesses and Principal Inhabitants of the Town of Portsmouth in the County of Southampton humbly praying for the reasons contained therein, that His Majesty be graciously pleased to give direction that the Principal magazine for the Reception of Gunpowder situated at the West End of the said Town facing the High Street may be removed to such a distance as His Majesty in his great wisdom shall think proper . . ..' Commissioner Hughes on 6th May 1766 wrote to the Navy Board suggesting that the site for the new powder magazine should be Great Horsea Island, and stressed that he personally strongly recommended an early acceptance of this site.[5] Later that month the Navy Board sent a letter to Mr. Stephens of Portsmouth Borough Council to the effect that they hoped their Lordships would decide to accept Commissioner Hughes's recommendation with all speed so that work could commence at once. However, four alternative sites were listed and in June 1776 a report was submitted by the engineers and civil officers investigating 'The Proposed Situation for the Powder Magazine at Portsmouth'. The following sites were considered and assessed as follows:

Horsea Island	Very Improper
Whale Island	Very Improper
Priddy's Hard	Most Eligible
Boatswains Hill Coppice	Next Eligible
Portchester Castle	Next Again Eligible

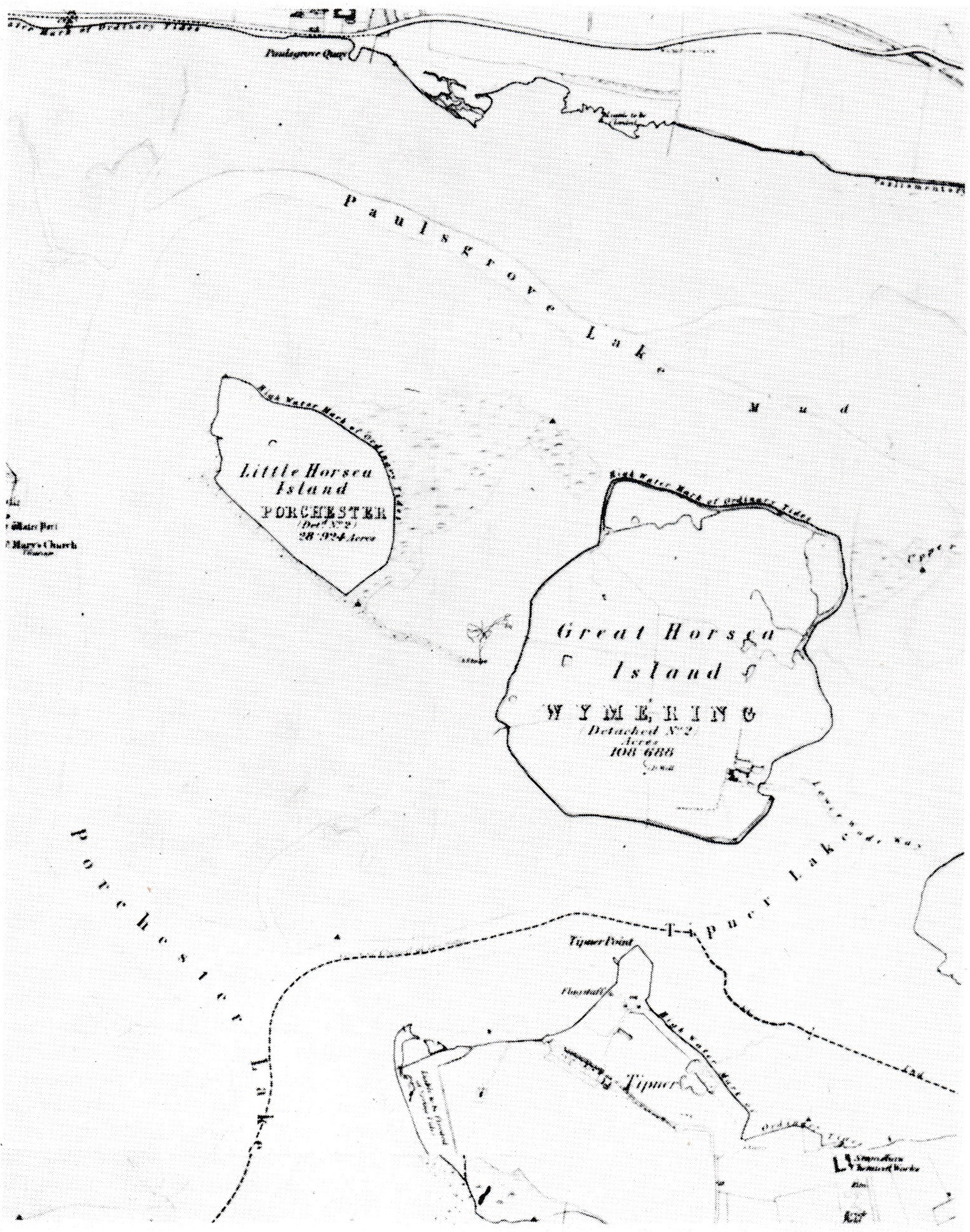
The choice fell on Priddy's Hard and the two Horsea islands remained in agricultural use for over one hundred years.

Great Horsea consisted of 108 acres of farmland of which 58 acres were below the level of high tides. This area was embanked and drained by ditches with self-acting sluices, which allowed excess water to run off at low tide. It provided excellent coarse grazing for cattle. Near its centre was a large pit, which provided gravel for the repair of the 'wadeways'. (In the 'naval' period, the gravel was also used for construction purposes.) The farm buildings included a red-brick farmhouse of c1740 with extensive outbuildings, including two large thatched barns reflecting the cultivation of crops. Little Horsea was considerably smaller with 29 acres of farmland and 27 acres of marsh. Farming operations were based on a small single storey farmhouse of c1805 with modest outbuildings.[6]

Communication with the mainland was by means of three 'wadeways'. These were constructed of large stones with a surface finish of fine gravel. They were built across the normally impassable soft mudland and were negotiable only at times when the tide was low. For two relatively short periods in each twenty-four hours, they were passable for pedestrians, animals and vehicles. Owing to the destructive effect of the tides, a 'wadeway' needed constant cleaning and repair; this involved periodic washing down as the tide receded, to remove soft mud deposited by tidal flow, and repair when the gravel has been washed away (especially after a gale). The time-honoured custom was for one or two men, at each end of a 'wadeway', to follow the receding tide out, sweeping off mud deposits and making the necessary repairs. Of the three Great Horsea 'wadeways', one ran from the south-eastern corner of the island to Tipner Point. This 'wadeway' ceased to be marked on maps after the late 18th century when it ceased to be used or kept in repair as a consequence of the construction of Tipner Magazine. Another was constructed from the north-east corner to Hilsea, and was known as the Hilsea or Upper Wadeway. This ceased to be used during the 1914–18 war, chiefly as a result of the extensive flooding of northern Horsea in 1913, and by 1919 was completely obliterated. The Lower or Stamshaw 'wadeway' shown on all maps until the land reclamation of the 1970's, was the principal one, being wider than the others, and having a short wooden bridge-span at its centre where the creek carried water even at low tide. This 'wadeway' ran from the eastern island shore to Stamshaw. In 1835 convicts from the prison hulks in Portsmouth Harbour were employed to rebuild the Hilsea and Stamshaw 'wadeways', working only at low or relatively low water; which must have taken considerable time to complete.

Mr. Bovill-Smith, a wealthy landowner of Wickham in Hampshire, bought Great Horsea island for £4,500 in 1868. The farm on the island had become very run-down so Mr. Bovill-Smith had the house and buildings renovated, ditches cleaned and fences repaired. He then installed a resident manager. who was replaced by a Mr. Gregory. He ran the farm from 1877 until 1885. The War Department had purchased a copyhold interest in Little Horsea in 1805, with the construction of a magazine in mind but this was not carried out and agriculture continued.

During the 19th century, two plans for development on Great Horsea failed to materialise. An overall plan of defence works for Portsmouth was submitted to the War Department in 1857 by Major Jervis, which included a north facing rampart on the island.[7] Extensive fortifications were constructed, but not on Horsea. In 1883, Mr. Soppe, a factory owner of Southsea sought a lease for land



on Great Horsea for a soap factory to be operated by a 'Horsea Island Soap, Tallow and Margarine Manufacturing Company'. There was very strong objection to what would have been a very odoriferous undertaking. However, Messrs. Chinnock of London who acted as agents for Mr. Bovill-Smith were possibly responsible for his refusal to grant a lease, by their hints of purchase by a defence department. In 1883 the Admiralty asked to survey the island to assess its suitability for a barrracks, stores and a torpedo range, in that order. Major G. E. Grover of the Director of Works' Department carried out the survey with permission from Mr. Bovill-Smith but nothing more was heard of the project. Then, on 19th December, 1884, the Admiralty wrote to Bovill-Smith asking to purchase the island outright for reasons that were not given at that time.

A time of change

Great change on the two Horsea islands followed the letter of 19th December 1884; a change brought about principally as the result of the invention by an Austrian of the fish torpedo. The British Admiralty, sometimes slow to accept new ideas, was quick to recognise the potential of this new weapon, and by the 1870's and 1880's Britain was leading other naval powers in the development and study of torpedo warfare.

During this time the Fleet were using a small, slow and not entirely reliable torpedo, which was nevertheless a weapon on which improvements were constantly being made. Periodic testing and adjustments were necessary for all existing torpedoes, together with extensive training for naval personnel of the Fleet Torpedo Department, and frequent trials and experiments were carried out in order

to check new ideas and improvements. Ideally a stretch of water was required free from tidal currents, the adverse effects of strong winds, sudden temperature changes and the curiosity of civilian craft. Throughout the 1870's and early 1880's the Navy used a stretch of water at Stokes Bay, another in the narrows off Whale Island, and a third in Portchester Lake. But none of these sites were entirely suitable and the Admiralty received frequent complaints and suggestions from senior naval officers interested in improving the new weapon, foremost among them the great 'Jackie' Fisher, then a Captain.

It was not surprising therefore that on 1st July 1884 a confidential report was submitted to Their Lordships of the Admiralty by the Committee of Torpedo Instruction, a body specially set up early in that year to look into the many varying and urgent needs of the fast-growing Torpedo Department of the Navy.[8] The report detailed an essential requirement for a torpedo range of 800 yards minimum length, non-tidal, with seclusion from the public. Its title was to be the Whitehead Torpedo Adjusting and Experimental Range. Finer detail included a width at the firing end of 20 yards, and at the extreme end of 80 yards, with a depth varying from 30 feet at the firing point to 15 feet at the opposite end. In order of estimated suitability, seven sites were submitted:– (1) Forton Lake, (2) Haslar Lake, (3) Tipner Peninsula, (4) Milton Canal, (5) Whale Island, (6) Great Horsea Island, (7) Great and Little Horsea Islands together. Previously, in the autumn of 1882, Forton Lake and Whale Island had been investigated for their suitability for a torpedo range. The cost of developing Forton Lake was estimated at £110,000; the cost of land reclamation adjacent to Whale Island and subsequent cost of constructing a range was put at £102,000. Investigation in 1884 of Milton Canal and Tipner Peninsula resulted in each being found unsuitable. Haslar Lake for some unknown reason was not investigated at all. From previous surveys it was estimated that Great Horsea Island on its own was not suitable; so the final decision was made to join the Horsea Islands together in order that a torpedo range of 800 yards length could be enclosed. This decision was speedily followed by the Admiralty letter of 19th December 1884. Bovill-Smith replied that he was prepared to sell, and negotiations for the purchase opened immediately. With Messrs. Chinnock & Co. acting on behalf of Mr. Bovill-Smith, the original asking price was £30,000; the Admiralty offered £9,000 which was refused. Compulsory purchase was considered but not proceeded with. The total cost of land and construction estimated immediately after it was decided to use the two Horsea Islands was £70,000. Negotiations continued and on 28th April 1885 a price of £15,000 for the land was agreed, plus a separate payment for the current value of all farm stock and standing crops. Mr. Bovill-Smith received £248. 7s. 6d. for 50 head of cattle, over 100 sheep, tillage, value of grazing, manure, standing crops of oats, mangolds, cabbages, carrots and turnips, bringing the overall cost to £15,248 7s. 6d.[9] In the annual naval estimates for 1885, Vote II point I, the cost of purchase plus initial stage of development was set at £25,000. On 13th August, the War Department transferred its copyhold interest in Little Horsea Island to the Admiralty.[10] and by the September of 1885 preliminary work on the range construction had begun.

The task confronting the contractor was formidable. The two islands had a chalk subsoil with an average distance of 320 yards between them. The plan was to join the two islands and to excavate a strip down the centre, 800 yards by 80 yards at one end and 20 yards at the other. Such an undertaking required a considerable labour force. Convicts were sent from the recently completed prison at Kingston. With their warders, they were housed in wooden huts erected on the south side of Little Horsea and many of them spent two and a half years on the island.

As the accompanying maps show, Little Horsea was to be completely cut in two by the torpedo range and the entrance to the lock gates. The vast quantity of chalk and chalky marl thus excavated provided some of the material needed to reclaim the mud and marshland between the two islands, and was used mainly for the reclamation on the southern side of what was to be the range water. The large mass of extra chalk needed to complete the reclamation and levelling of the land and to provide the banking for the range where necessary was excavated from Paulsgrove chalk-pit and transported in barges from Paulsgrove Quay. Convicts were not employed on this part of the work. The old quay at Paulsgrove was repaired and strengthened. To facilitate the transport of chalk from the pit to the quay, a double railway track of two foot gauge was laid, crossing the main road. Some ten or twelve trucks on each set of lines were joined by a heavy wire rope reeved through a block and brake drum at pit level. It was possible to control the descent of laden trucks downhill as their weight pulled the empty trucks up to the pit.

The major problem in conveying chalk from Portsdown Hill to Horsea lay in finding an efficient method of towing heavily laden flat-bottomed barges across Paulsgrove Lake and hauling the empty barges back to the loading quay. Strong fast-running tides in this area and the prevailing south-westerly winds were hazards, whilst the relatively shallow depth of water over the mudbanks, even at high tide, precluded the use of deep-draught powerful steam tugs. During the fairly short period at the peak of high water, approximately every twelve hours, it would be necessary to haul laden barges to the islands and return

empty barges to the quay in order that the land reclamation work should continue uninterrupted between tides. The Army were called in and undertook to supply a steam engine for hauling the barges back and forth across Paulsgrove Lake and also driving a saw-mill. A large drum-winch was hauled to Great Horsea and sited on the north-western shore; nearby a saw-mill was erected.

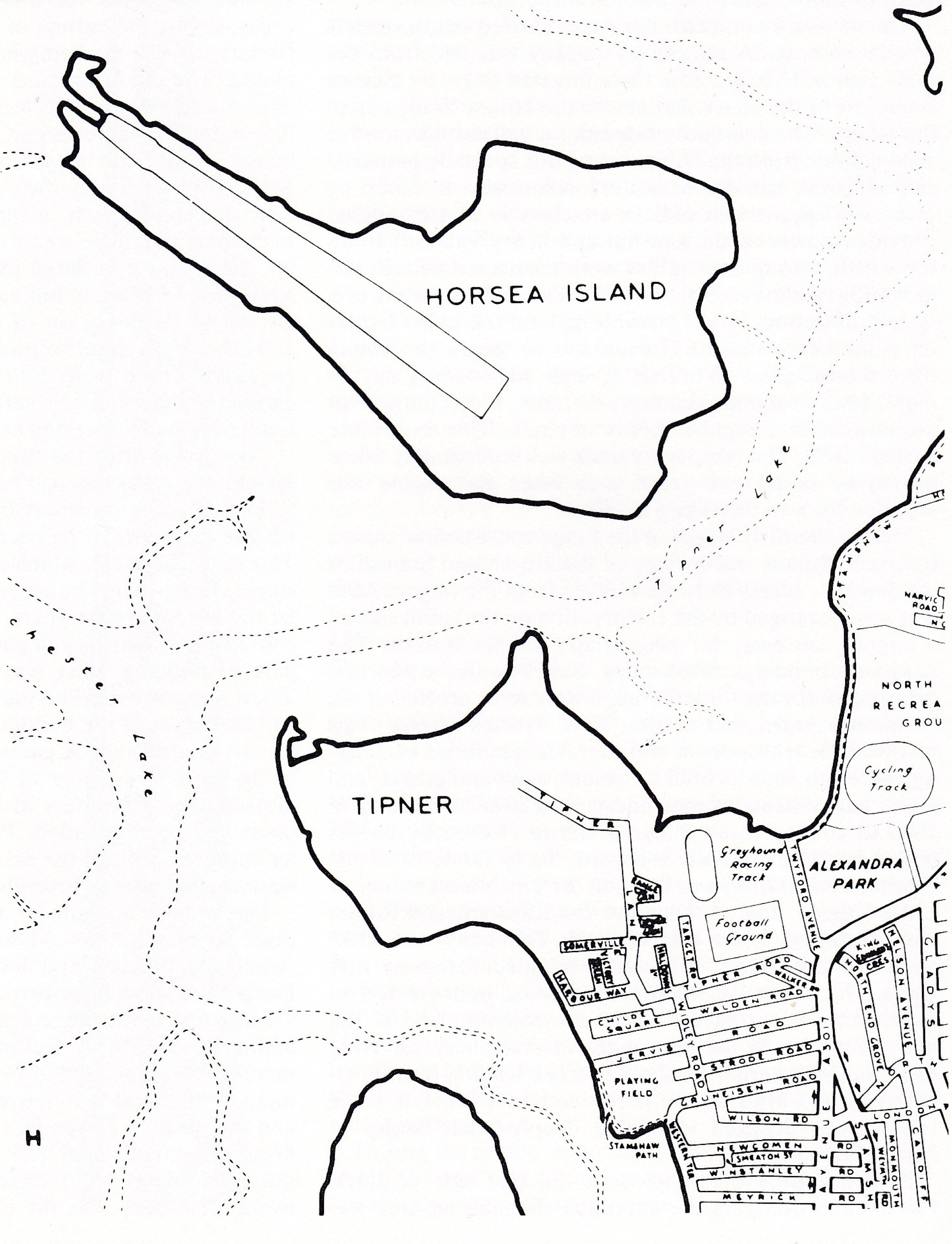
The novel way in which the Army carried out the task is worthy of note. A temporary railway was laid from the main line at Hilsea across the cultivated fields by Horsea Lane, on to the shore and across the Hilsea Wadeway to the island. On a suitable low tide, a railway locomotive was steamed from the Hilsea siding to a specially prepared site on Great Horsea; here the locomotive was raised by jacks and special belt pulleys attached so that its engine provided power to the sawmill and heavy winch.[11] From the winch, strong wire cables were connected with Paulsgrove Quay about 1,300 yards distant, and by means of a system of pulleys it was possible to haul the laden barges on a shuttle service to Horsea and to return the empty ones to the quay. Working at high water only, day or night, as the varying tidal times dictated, it was thus possible to provide a regular supply of chalk. This took place early in 1886. The temporary track was immediately taken up, to be relaid two years later when the engine was steamed back to the siding at Hilsea.

During the early stages of the range construction, access to Great Horsea was by way of the Hilsea and Stamshaw 'wadeways'; access to Little Horsea from the larger island was soon arranged by the construction on the south side of a narrow causeway for pedestrians and small carts. The necessary buildings, workshops, boiler-house, stores and firing-point for the torpedo range were to be erected at the extreme western end of the 'New' Horsea Island. This involved the transport of considerable quantities of building materials such as bricks, cement, sand and gravel, and many heavy items of machinery. It was decided early in 1886 to convey these things to Little Horsea by barges towed from Portsmouth dockyard. To facilitate their discharge, a small quay was built on the north-west corner of Little Horsea, and on this a five-ton Ransome and Rapier hand-operated crane was erected. The quay was nicknamed 'Stores Pier', a name it retained for some fifty years. This crane was the first mechanical item erected on Little Horsea during the range construction, and at the time of writing is the only piece of machinery surviving from the 1887 period. A shallow creek leading from Portchester Lake towards the north-western corner of Little Horsea was dredged to enable deeply-laden barges to berth at the Stores Pier.

Before cutting the range into the east side of Little Horsea and dredging the approach channel, an area was excavated on the firing-point and lock-gates site. These two structures were built in early 1887 and completed before the sea was admitted. Along the north-eastern side of Little Horsea there were some 27 acres of marshland, part of which dated from an attempt at reclamation in 1866.[12] At a point on the north-western corner of this marshland an area was again reclaimed and built up with material excavated by the cutting of the channel to the lock gates. By late in 1887 the firing-point and lock gates were completed. The old farmhouse on Little Horsea had been enlarged, and early in 1888 was to be occupied by the island's first caretaker-storekeeper. Torpedo workshops, boiler-house, stores and messrooms were completed by mid-1888. The temporary dwellings for convicts and warders were dismantled early in 1889. The original plan had been to connect the range water with the tidal waters surrounding the island by a large iron culvert with sluices on the south side of Horsea, but early in 1886 this plan had been altered to include a set of lock gates so that steamboats and other craft could be brought in and out of the range as required. There were four lock gates fitted with heavy gunmetal sluices. Each gate was moved separately by a small, manually operated cast-iron capstan.

Concurrent with the erection of the five-ton crane, a system of two foot gauge railway tracks was laid, initially to facilitate the transport of building materials and later for the transport of heavy torpedoes and general stores. This railway system, which connected torpedo workshops, stores, firing-point, boiler-house, etc., continued in regular use for some sixty years. Towards the close of 1888 the convicts and warders departed, having completed their part in building what was afterwards described as the 'finest torpedo experimental range in Europe'. By September 1888 most of the buildings had been completed except for the guardroom. A caretaker was already in residence being the first member of the Admiralty staff to live on Horsea. The machinery in the workshops and the firing-point had been installed. Preliminary trials with boilers, air compressors and the actual firing of several torpedoes were carried out in November.

The official opening of Horsea Torpedo Range took place in March 1889. Many high-ranking naval officers, Admiralty officials and local dignitaries attended. The firing-point was a large two-decked structure at the narrow western end of the range water standing in the water which had a depth of thirty feet at this point. The initial equipment in 1889 consisted of two submerged frames, one submerged tube and two above-water tubes, one at five feet and the other at eleven feet above range water-level. The firing pit extended for 150 yards from the tubes and was thirty feet deep, the remaining 700 yards of range being twenty feet deep. On the top deck inside the firing-point


HORSEA ISLAND
Tipner Lake
chester Lake
TIPNER
H
STAMSHAW
NARVIC ROAD
NORTH RECREA GROU
Cycling Track
Greyhound Racing Track
ALEXANDRA PARK
Football Ground
TIPNER LANE
SOMERVILLE PL
HARBOUR WAY
TARGET RD
TIPNER ROAD
WALKER RD
TWYFORD AVENUE
WALDEN ROAD
CHILDE SQUARE
ROAD
JERVIS
STRODE ROAD
WIDLEY ROAD
PLAYING FIELD
GRUNEISEN ROAD
WILSON RD
A3017
STAMSHAW PATH
WESTERN TER
NEWCOMEN RD
SMEATON ST
WINSTANLEY RD
MEYRICK RD
NORTH END GROVE
NELSON AVENUE
GLADYS
LONDON
MONMOUTH
CARDIFF

The Firing Point as first constructed
Author's Collection

Horsea Island in 1970
Portsmouth City Library

was a steam winch for raising and lowering the submerged tube and frames. A guardrail surrounded the flat roof of the building which was used as an observation platform. The guardroom was fully manned from early 1889 by one Petty-Officer, one Leading Seaman and eight Able Seamen. The duties of the guard were primarily the security of the island and operating the pulling-boat service, using naval skiffs, thirteen and a half foot boats until c1924 and sixteen foot boats afterwards. These plied between the island and the waterside landing at Portchester. At this period the total inhabitants of the 'New' Horsea were the guard, the civilian caretaker-storekeeper and his family and the manager and his family on Great Horsea Farm now leased to Mr. Frank Bevis of Mile End, Portsmouth. The administration of the island came under the Captain of HMS *Vernon,* a Commissioned Gunner (T) being the Officer-in-Charge. He was quartered in the *Vernon* and travelled by steamboat to and from the island each working day, together with the range staff. Landing at low tide was made possible by using the island section of the old Portchester 'wadeway' whilst at high tide the Stores Pier was used by all steamboats. The torpedo range staff in 1890 consisted of the following:–

Commissioned Gunner (T) in charge
3 Petty Officers 1st Class (Leading Torpedo Operators)
3 Petty Officers 2nd Class (Leading Torpedo Operators)
14 Able Seamen (Seamen Gunner Torpedo)
2 Leading Stokers and
2 Stokers for range steamboats
1 Stoker for range boiler-house duties[13]

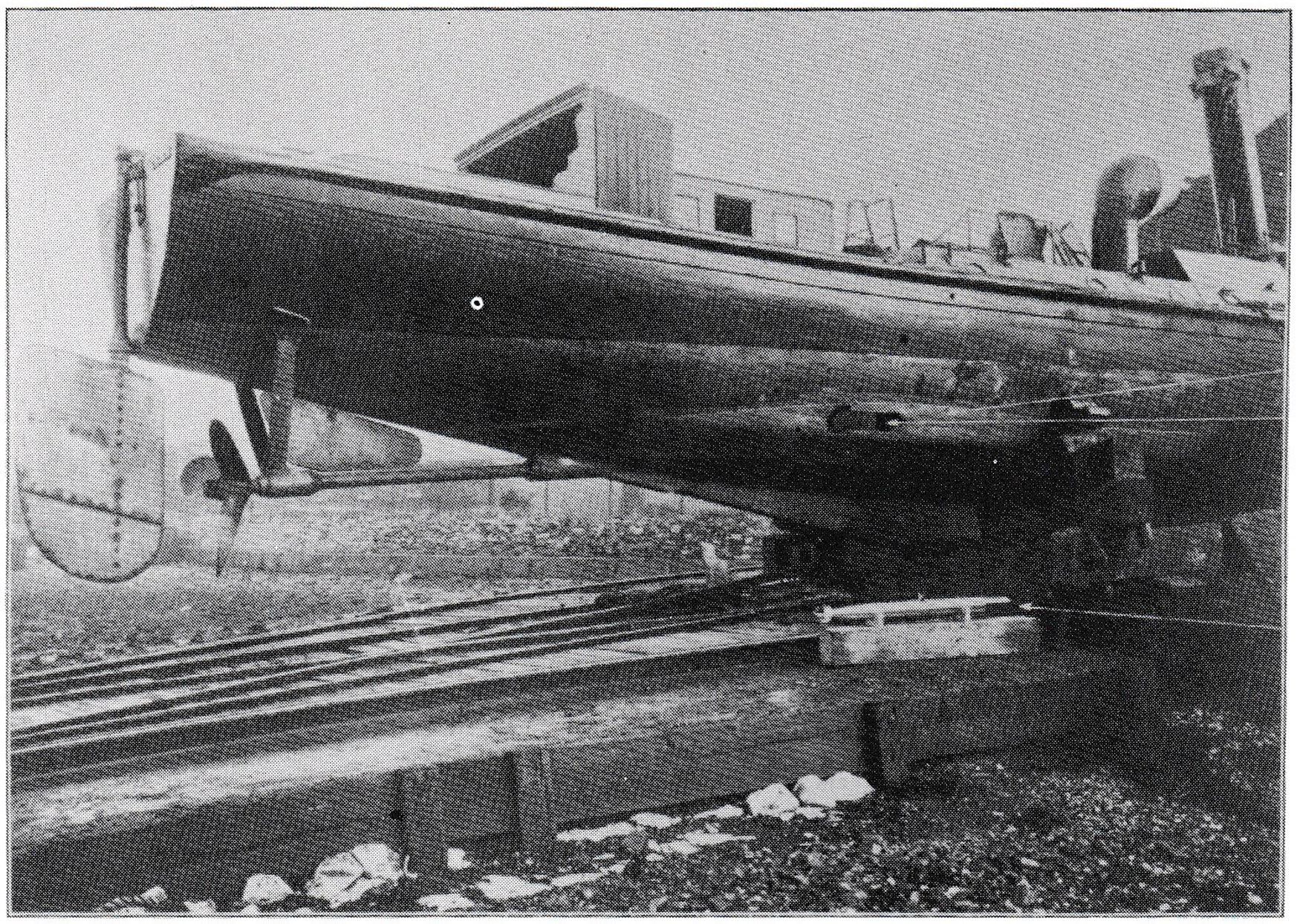
Besides the range staff, many naval officers and ratings attended torpedo-training courses on Horsea. Civilian staff from the Woolwich torpedo factory also used the range regularly. On working days the messroom and galley built on the northern side of the island was used for midday meals.

As a result of the range construction, the geographical features of Little Horsea had changed considerably since the autumn of 1885. Formerly the island was relatively high in its centre, shelving slightly to the south-west, and considerably to the north-east and the marshland area. Now the former 29 acre island was cut virtually into two halves, with a fairly uniform surface level in each, its south-eastern side extending to reach Great Horsea. The larger island changed little geographically; its western shoreline was attached to Little Horsea along about half of its length, and the 850 yard range water penetrated this area by only about 25 yards. Most of Great Horsea remained much the same as it had been for centuries, and for years after 1885 most was leased by the Director of Works for farming. The farmer and his family were of course subject to the security regulations applying to the new island as a whole, although the interpretation of these regulations varied somewhat with successive officers in charge.

Many early maps of Great Horsea show a fairly constant division into thirteen fenced meadows and paddocks, and these were almost unaltered by the change from private to Admiralty ownership. Many interesting names of these plots continued in use until the 1920's. These included Treefield (fourteen and a quarter acres) Triangular Paddock (three acres) Upper Marsh (eight and a half acres) Homefield (nine acres) and Pondfield (eight acres). Up to 1885 both islands relied entirely on well-water. During the construction of the boiler-house in 1887–8 a new well sunk specifically to supply water for the two boilers was soon found to be unsuitable and consequently a two-inch supply main was laid from Paulsgrove in 1889. Mains water was then supplied to the caretaker's cottage, guardroom and messrooms. Great Horsea Farm continued to use well-water, but by 1894 complaints that the water was brackish and unfit to use became so persistent that the Director of Works decided to give Horsea an adequate supply of fresh water for all purposes. A four inch galvanised main was laid in 1895 from the twelve-inch mains water pipe at Portsbridge along the old Hilsea 'wadeway' line to Great Horsea and then to Little Horsea along the northern side of the range water.

Range improvements

Improvements in the efficiency of the torpedo, in its speed and range, were constantly being made, so that it is not surprising that on the 11 August 1892, only four years after the virtual completion of the range, the Captain of HMS *Vernon* made the following submission to the Admiralty.[14]
'(1) I have the honour to submit that the question of the lengthening of the torpedo range at Horsea be considered in time to admit of the cost of the work being included in next year's estimates, should this extension be approved. (2) The present length of the range only admits of torpedoes being run for a distance of 600 yards, which at the time the range was designed was the regulation distance for the adjustment of torpedoes. (3) The introduction of the longer range 18-inch torpedoes, which form the torpedo armament of the whole of the battleships, 1st-class cruisers and other ships of the 1889 programme, necessitates their adjustment to 800 yards. (4) At Portland, Messrs. Whitehead have established a tidal range of about 2,000 yards and are consequently able to adjust their 18-inch torpedoes for 800 yards without any difficulty. (5) The Woolwich 18-inch torpedoes are adjusted at Horsea, and



the range not admitting of a greater run than 600 yards, the torpedoes are adjusted for 800 yards by a process which, though believed to be fairly correct, is not as satisfactory as if the torpedoes were run for the actual distance of 800 yards. (6) I would therefore submit that the question of lengthening the Horsea Range 200 yards may be considered'. In reply to this letter the following is an extract, dated 16 November, 1892:- 'That in view of more urgent requirements My Lords have decided that the above service should be postponed'. The proposal for a lengthening of Horsea range became even more urgent: it was raised by letter again in 1897, 1898, 1899 and 1900. On 5 Sept. 1900 Captain C. G. Robinson of HMS *Vernon* submitted a proposal to Admiral Sir Clume Seymour, CinC, that Horsea range should be extended to a total of 1,350 yards.[15] He remarked in his letter 'that the range was still the finest in the country!' Finally in the autumn of 1903 approval was given for an extension, and it was stipulated that the task was to be taken up immediately. The eastern end was to be extended into Great Horsea by another 265 by 80 yards and work commenced in 1904. The chalk excavated was used to reclaim three and a half acres of marshland on the north side, resulting in this becoming the highest part of the island.[16] It was also used to repair a large section of the shoreline on the south side which had been eroded by the sea. The range extension gave a workable length of 1,100 yards with an overall length of 1,115 yards, and was completed by June 1905. The island area, after a survey at this time, was recorded as 160 acres plus 25 acres of semi-marshland.

Communications and other developments

The approach by boat, especially steam pinnaces and steam picket-boats was never easy, and during low tide or bad weather was often very difficult. In 1898 a 250 yard long wooden pier was built to connect the south-western corner of the island with the navigation channel off Portchester Castle. Built of wood, it carried the standard island two-foot gauge railway track for its entire length with a one and a half ton hand-operated crane on the seaward end. From 1898 onwards all steamboats and other craft calling at the island moored to this pier, generally called the Long Pier. Only heavy stores and coal barges were dealt with at the Stores Pier and unloaded by the five-ton crane. The Long Pier was sited almost wholly along the line of the original wadeway from Little Horsea to Portchester, this being the shortest distance between the island shore and the navigation channel. During 1898 a large well-appointed boatshed was also built just north of the guardroom. It was equipped with a patent slipway, and a large boat-cradle capable of lifting boats of up to 28 tons. Four 56 foot steamboats could be accommodated at one time, two inside the building and two outside on the slipway. Two winches for hauling boats up the rails of the slipway were provided. They were powered by obsolete Schwartzkopff 3-cylinder engines taken from torpedoes, with a capacity of 36 tons. This was probably the first occasion when torpedo engines were so used in the Royal Navy, and they remained in use until 1941.

Also in 1898 a second large mess-hall and galley was built to accommodate the ever-increasing number of officers and men who spent each weekday on the island. They were engaged on torpedo work and on other activities such as training in the use of explosive demolition, and diving. The firing-point was considerably extended and a new eighteen-inch torpedo tube fitted at eleven feet above water level. An observation building was provided on top of the existing two-deck structure.

For long it had been considered essential that the officer-in-charge of the island should be in residence as opposed to being quartered in HMS *Vernon* which then consisted of a group of vessels moored at the southern end of Portchester Lake. A house was built during 1897 and 1898 and was first occupied in the autumn of the latter

Torpedo Range steam picket boat with scale model torpedo
Author's Collection

year.[17] Sited near the caretaker's cottage on the south-western part of the island, it was a modest brick and slate building. This was soon found to be too small, and an additional two bedrooms and an office were added in 1901. Horsea Island, apart from its use for testing, adjusting and experimenting with torpedoes was fast becoming the practical centre for other experimental work. For instance up to 1900 spar torpedo trials (a weapon that preceded the fish torpedo) were carried out in the range from steamboats. Early experiments with oil-fired marine boilers were conducted using a 56 foot steam picket boat. Already there were terms such as the Navy's 'Hush Hush Island' appearing in the local press. Records are not readily available of the variety and type of experimental tasks carried out at Horsea towards the end of the nineteenth century. However, the number of torpedoes taken to Horsea each year for tests and adjustments grew rapidly; 301 in 1892, 650 in 1898. The large marshland area on the north-east side of what was formerly Little Horsea proved an ideal site for experiments with explosives.

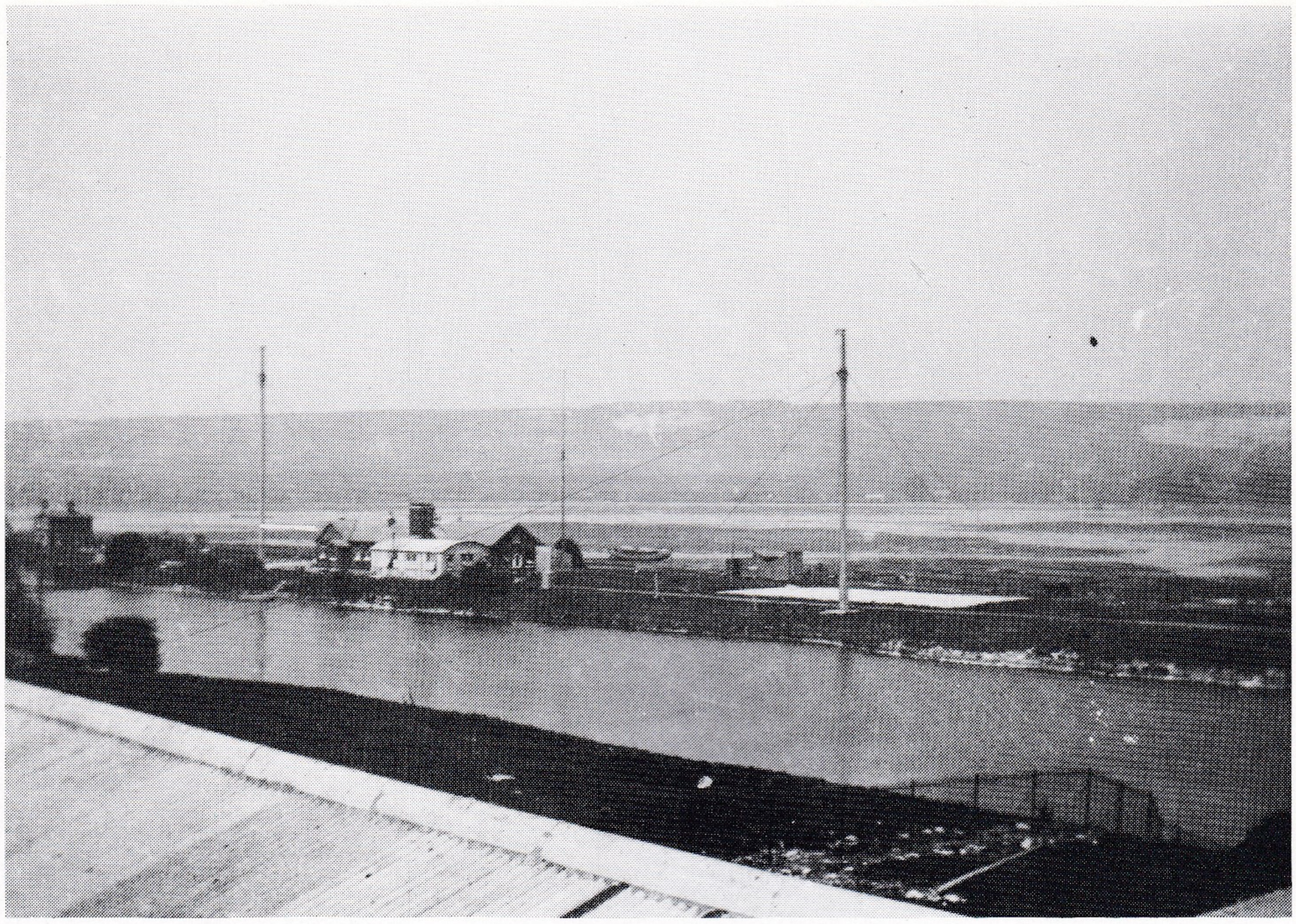
Wireless Telegraphy

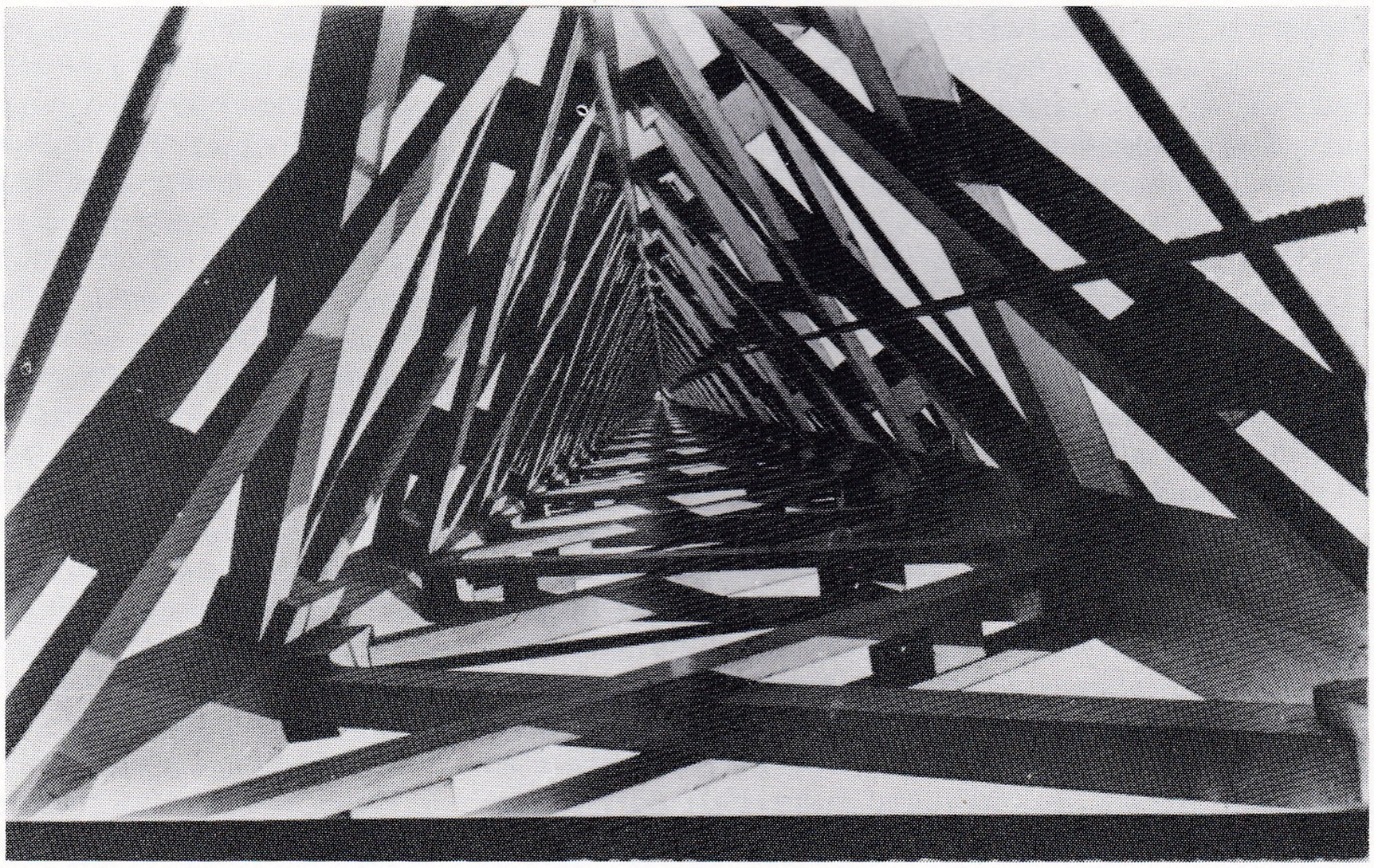
Just as an indirect effect of the work of Luppis, the Austrian inventor chiefly responsible for the early fish torpedo, was the development of the two Horseas, so at the turn of the century the invention of wireless telegraphy by the Italian, Marconi, was to produce another change in the use of the 'new' Horsea Island. By 1899 the Navy was about to make a decision on whether to adopt Signor Marconi's wireless telegraph system, then largely experimental, or that of Captain Jackson of HMS *Defiance* and later of HMS *Vernon*. In March of that year the decision was made in favour of Marconi and HMS *Vernon* became the Navy's foremost wireless telegraphy centre.[18] Equipment was rigged aboard the old HMS *Warrior*. This was the Navy's first iron-clad, hulked in 1900, and from 1904 part of the floating establishment of HMS *Vernon*. The task of research and training was thus undertaken by the Navy's torpedo establishment. In 1901 a handbook was issued to the Fleet to advise and instruct naval officers and ratings in the new method of communication, the book having been written in HMS *Vernon* in 1900, largely under the guidance of Captain Jackson. Much experimental work went on at this time between the few ships equipped with wireless telegraphy. By July 1901 six low-powered shore wireless stations were in operation, followed in 1902 by the construction of four medium-powered stations. By 1904 naval vessels reported that clear signals had been received from up to 130 miles over land, and 300 miles over sea. Wireless telegraphy signalling by HMS *Vernon* in excess of 1,000 miles was achieved by 1906. The stage was now set for the introduction of high-powered shore wireless stations for the Royal Navy. Discussions in 1906 led to plans the following year to build at first three such stations, to be known as Marconi high-powered Admiralty W/T stations: one at Gibraltar, one at Cleethorpes near Grimsby, and the third on Horsea Island. Plans drawn up in 1907 for Horsea were put into effect the next year and completed by early 1909. Horsea, the first of the three stations to be completed, came into service in March 1909 and was manned by coastguard ratings.[19]

The first W/T officer in charge of Horsea Island high-powered Marconi station was Lieutenant R. R. Cooke, RN, appointed on the 30 October 1908. Electric power for the W/T station was supplied by the generating station of Portsmouth Dockyard via a cable stretching three and a half miles across the harbour bottom. It is worthy of note that up to this time the only power on the island was steam, gas never having been piped to the island. All lighting had been by oil lamps or candles. One of the earliest buildings put up by the Admiralty in 1887–8, the mess-room block, on the north side of the island, was extended and altered to house the equipment of the W/T station, so that a compact unit including quarters for ratings, was achieved. Four wooden aerial masts were erected, in eight foot tall tabernacles. The overall height of each mast was 150 feet and in construction they were very much like ships' masts. Each comprised a 100 foot lower mast with 60 foot topmast, the whole supported by wire stays. Eight 'spreader' masts, each of 60 feet, surrounded the four tall Marconi masts, so that a total area 300 feet square, was covered by four separate aerial sections. Four 'feeders' led from the aerials down to a 'feeder' tower. Horsea high-powered W/T station, a 100 K/W station, had the call letter Y.[20] It was already the Navy's 'number one' station, covering training and experimental work in W/T besides routine Admiralty work.

There being now a greater need for security, it was decided to surround the entire western end, including the aerial masts, with a ten foot 'unclimbable' iron fence; (the two houses and guardroom were of course within this area). The number of ratings in the guard was increased so that a more comprehensive series of guard duties and tighter security could be introduced. It now became necessary for the officer in charge of the wireless station to be a resident on the island and early in 1909 approval was given for building a house close to the station. A fine red-brick house was built towards the end of that year on the north-west corner of the island, just outside the security-fence area, at a cost of £550.

Successive advances in the W/T field led to many changes in the equipment at Horsea, and by 1912 it was found necessary to plan an entirely new, separate and up-to-date station; this was to be sited again on the north side





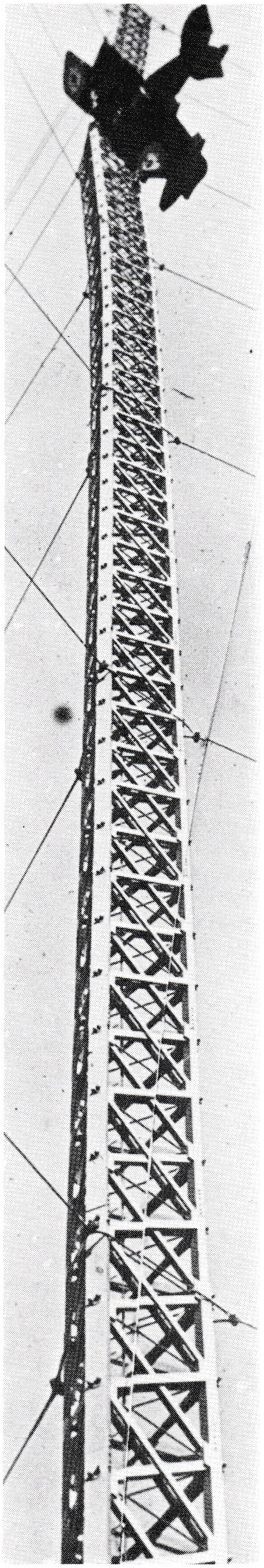
of the range water, but roughly halfway along the length of the island. In order to maintain world-wide transmission and reception the new high-powered transmitters would require very tall aerial masts. Transmission at this time was not directional but broadcast through 360°.[21] Early in 1913 an American, Mr. G. T. Elwell, contracted to erect four wooden masts on Horsea, each to be 446 feet high. Two on the north side of the range, two on the south, they were to form almost a diamond in plan with approximately 800 feet between each mast. The first mast on the western side was completed in 1913 and the second and third early in 1914. Possibly as the result of the outbreak of hostilities in August, the fourth mast was temporarily cancelled. It was finally completed in November 1921. These graceful wooden giants, known as the Elwell masts to distinguish them from the old 150 foot Marconi masts, were to dominate the skyline in the upper reaches of Portsmouth Harbour for two decades. Indeed they were unique and were claimed (at the time of building of the fourth and east mast in 1921) to be the tallest masts in Europe. They were of lattice construction, entirely of wood, with sections formed of three main members in triangles of approximately seven feet per side. With no taper at all from bottom to top, each mast contained 91 tons of wood. The total weight includ-

Marconi Wireless Telegraphy Station
Author's Collection

Inside an Elwell mast looking upwards
Author's Collection

ing iron tie-rods, bolts and fishplates, galvanised wire support stays and insulators was over 100 tons.[22] All the metal parts including hundreds of feet of galvanised steel staywire and huge anchor sheaves were conveyed from Cosham railway station goods yard by horsedrawn carts via the Stamshaw 'wadeway'. Wooden sections for the masts were transported by sailing barge from Flathouse Quay, being off-loaded at low tide on the hard area (formerly the Tipner Wadeway). Every wooden section was ready cut, shaped and drilled to fit its part of the structure. A temporary track of the island two-foot gauge railway was laid from the beach to each mast site. In high winds, the tops of the masts moved four feet eight inches. A one-ton and a four-ton hand winch were sited near the base of each mast for the erection of aerials, re-rigging support stays and the like. The enormous surface area of wood in each mast presented some 'weathering' problems, and a system of inspecting the mast, checking the rigging and repainting the whole structure in grey was instituted on a two-yearly basis. Depending on the condition of the mast, this process took three or four months to carry out. The work was undertaken by naval ratings, all volunteers, together with civilian riggers from Portsmouth dockyard. The work force included a Warrant or Commissioned Boatswain in charge, Petty Officers, other ratings and civilians.

In the early morning of 14 September 1917 Flight Commander E. A. de L. Ville of Calshot took off from Southampton Water in his Sopwith Baby seaplane, a small aircraft with a top speed of 100 mph. He headed eastwards into the mist towards Portsmouth. His orders were to act as target for practice exercises by the anti-aircraft gunners. Ville, an extremely competent and experienced pilot, expressed a belief before take-off that the prevailing low mist would soon clear. Unfortunately he went slightly off course to the north-east and the mist became thicker. Five minutes after take-off his plane was heard over Horsea Island, apparently flying in a circle. Men on the ground, being unable to see the plane in the low mist, waited anxiously as the sound passed eastwards and then returned in a westerly direction, apparently at a lower level. The group of men listening expressed concern for the safety of the plane, for they knew that the three very high wireless masts, closely grouped with a maze of supporting steel wire stays, presented a hazard for low-flying aircraft. The wireless masts were in the process of being repainted and overhauled and the men who carried out this work were quartered in a number of huts near the base of the west mast. These were the men who stood listening to the unseen aircraft. Suddenly, as the sound seemed to be almost overhead, there was a loud crash followed by complete silence as the plane engine stopped. Men standing near the base of the mast, fearing that the plane would fall and possibly explode on impact, retreated hurriedly. However one man, Able Seaman Rath, shouting something to his fellows, began climbing the outside of the mast. There were no ladders on Elwell's 446-feet masts. A one-ton hand-operated winch was used to hoist a 'bosun's chair' up inside the mast, but it was slow compared to climbing, and was used chiefly for tools, paint and repair gear. The masts comprised three main members of timber, held together by wooden 'X' sections in lattice-work style, and horizontal tie-rods of iron at six-feet one inch intervals. Climbing was therefore, if quicker, certainly tiring for it involved continual hauling upwards by the arms and thrusting with the legs and there were 73 of these 'X' sections on each side, from bottom to top of the mast. During a climb an occasional rest was essential, and this was obtained by sitting, with legs astride the timber for safety, in the lower corner of an 'X' timber frame, with one's back resting on one of the mast main members: a most uncomfortable 'rest' as the writer can testify! As Able Seaman Rath started to climb, a thinning of the mist revealed a dark shape hanging on the mast not far from the top. Quickly two more men, Able Seaman R. Knoulton and Deckhand G. Abbott, began to climb up after Rath, Knoulton taking a length of 'riggers' rope with him. Other men, under the supervision of Leading Seaman Thomas began to operate the winch in order to raise the bosun's chair to the level of the plane. Knoulton and Abbott reached the plane just after Rath, who told them to climb to a higher level, secure the rope, and lower the end so that he could secure the pilot, whom he could see lying half-hanging over the front of a wing. Rath, at enormous risk to himself, edged out from the mast and secured the pilot to the rope, and then with Knoulton's help dragged him clear of the plane. Moments later the bosun's chair arrived and the three seamen at great risk managed to get the still unconscious man into it, whereupon the winch crew began to lower it to the ground. The plane in some miraculous way had missed the fatal wire stays, and struck one of the flat sides of the mast. Its propeller was smashed but the stump jammed between the latticed timbers and thus held the entire weight of engine and fuselage suspended. The violent impact had thrown Ville from the cockpit and knocked him unconscious by striking his head on the top wing, and he fell spreadeagled across the lower starboard wing. Only a thin wing strut prevented him from falling off to almost certain death 360 feet below. On reaching ground level many willing hands assisted to convey Ville to one of the huts where after treatment he regained consciousness. He was sent back to Calshot by steam picket-boat, where he later recovered in the sick bay. He reported the gallantry of his rescuers to his Commanding Officer who lost no



Villes' Baby Sopwith Seaplane hanging on the western mast
Imperial War Museum

Horsea Island in 1932 looking westward
Author's Collection

time in recommending all three seamen for an award for extreme bravery. This was approved and Rath received the rare award of the Albert Medal in gold while Knoulton and Abbott received the same award in silver. From this date onwards the western mast was usually referred to as 'Ville's' mast.

Of the team of men who worked on these masts, painting, re-rigging and repairing, about one-third worked almost permanently at ground level manning winches, preparing paint, stores and stay wires. Work on the masts required considerable physical effort, so that the ground crew comprised either older men or those whose fear of heights prevented their working efficiently at positions up to 446 feet above the ground. Rath was one of these 'ground staff'. Knoulton and Abbott were quite used to climbing but Rath was not, hence his spontaneous act of heroism was all the more creditable. He admitted afterwards that he had never climbed higher than the first stay wire about 73 feet high. Great credit was due also to Elwell, the designer and builder, for the way in which the mast withstood the impact of the plane. It was fractured and tilted from 360 feet upwards. Riggers from Portsmouth dockyard went to Horsea, the badly damaged plane was removed, and the mast given first-aid repairs. The broken part was 'fished' with new timber as one would splint a broken leg. However the mast was not fully repaired and straightened, but continued to carry out its task of holding aloft its part of the vast aerial system. Not until the autumn of 1918 were repairs completed.[23]

Life on Horsea Island

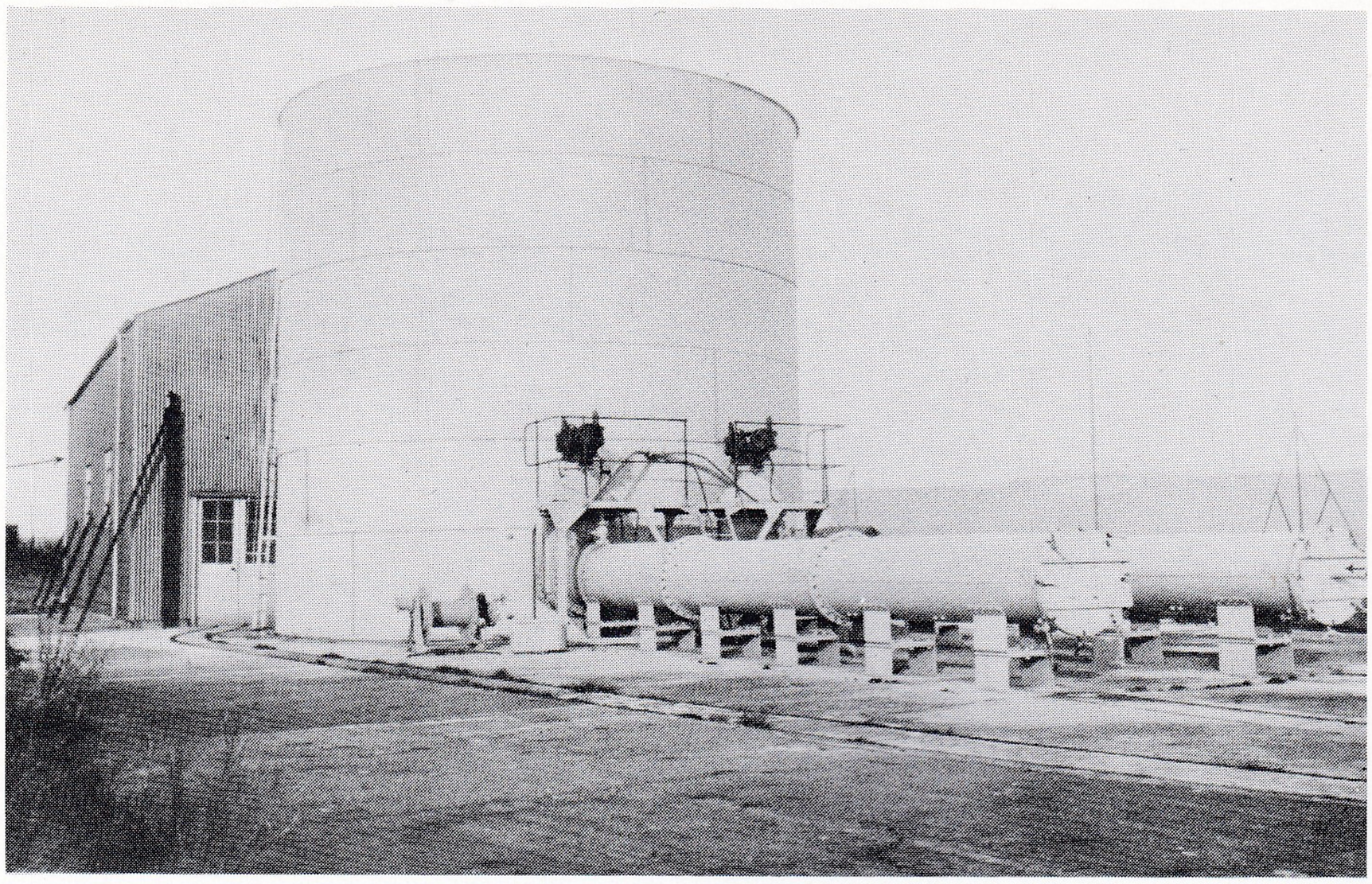
From the early 1900's all shore wireless stations had been under the orders of the Admiral Commanding Coastguards and Reserves, mostly but not all, being manned by coastguard W/T ratings with RN shore service W/T officers in charge. Possibly as a result of the outbreak of hostilities, the coastguard ratings were replaced at Horsea in 1914 by RN ratings, and this change-over was not reversed after the Great War. Again, possibly because of wartime stringency, the new high-powered station equipment was installed in wooden buildings of a temporary nature, which were sited adjacent to the north mast. Less elaborate security fencing was built around this area, consisting mostly of ordinary barbed wire rigged on ten-feet posts. During the period of hostilities the Army took over the security of Horsea Island, presumably to release more naval ratings for service at sea. In 1916 an anti-aircraft gun was taken to the island and set up in 'Lower Meadow' not far from the east mast site.

During the period up to the Great War, the western end of Horsea and part of the central area were taken up with naval experimental requirements. The farm on Great

Horsea was becoming less and less productive. By 1913 little or no cultivation took place but horses, cattle and a few sheep and pigs were reared. The northern half of bank-protected meadowland, although suitable for cattle was neglected and the drainage ditches and sluices received little or no attention with consequent deterioration over a number of years. Early in 1913 during a particularly heavy gale and high spring tide, the banking was breached in two places and some 58 acres or so of flat meadow were flooded. Repairs were made at the breach points, and the ditches and sluices overhauled by men sent from the Portsmouth Dockyard. This proved effective and the meadows became almost dry again. However, probably through wartime neglect, history repeated itself in the winter of 1916 when a fierce south-westerly gale caused the banking to breach in five separate places and the sea again flooded over about half of Great Horsea. Attempts to repair the bank and drain the land were half-heartedly made in 1920, but met with no success. From then onwards this once valuable farm land was regularly flooded by the sea at high tide and became unusable. From about 1922 the old farmhouse ceased to be occupied and rapidly fell into disrepair, the ground floor area being used to house pigs towards the end of the 1920's. Finally in 1933 this very fine example of a mid-Georgian farmhouse, still basically a sound structure, was demolished. The remaining area of Great Horsea continued to be leased for grazing, principally for horses. Fences and gates were kept in good repair in order to keep animals away from the area used by the Navy.

By the early 1920's the land adjacent to the dwellings and other buildings at the western end of Horsea had reached the typically business-like appearance of a naval establishment. A firebell, hung in a picturesque structure, with attendant hoses and buckets, was sited near the main hydrant, and firedrill was held regularly. There was a flagstaff in a central position with flower and vegetable gardens neatly enclosed by gravelled paths and white-washed stone borders. A large greenhouse had been constructed just before the Great War. Horsea's position in the upper reaches of the open area of Portsmouth Harbour made it vulnerable to the prevailing south-westerly winds. In 1890 the local press referred to it as a 'windswept geographical curiosity'. Because of this many evergreen hedges were planted to act as windbreaks, particularly around gardens, buildings and along footpaths.

The island became very popular amongst naval personnel as a picnic area during the summer months, since it was quiet and peaceful at weekends, with a host of amenities such as swimming, boating, fishing or shooting (there were rabbits and wild-fowl in abundance). The officer-in-charge invariably received and acceded to requests by officers and ratings to spend a day on the island with their families. From 1898 resident officers-in-charge, Lieutenants (T) or Commissioned Gunners (T) were appointed for an average of two year's service on the island, and to these must be credited the neat layout of most of the western half. Commissioned Gunner (T) William Kitto, appointed in May 1907, was responsible for the laying out of the gardens and surfacing footpaths. The Great War and the consequent reduction in naval resident personnel allowed the general smartness of the island to lapse, but in August 1922 Lieutentant (T) Walter T. Silk was appointed. He brought about a vast improvement and left the station, two years later, looking much better than he had found it, having ordered the repainting and repair of dwellings and buildings. In the 1920's traffic to and from the island was conducted in three different ways. First the 'wadeway' to Stamshaw was still in use at low tide. Second, steamboats plied to and from the King's Stairs in Portsmouth Dockyard or HMS *Dolphin* and after 1924, HMS *Vernon* at the Gunwharf. Thirdly, skiffs were used to and from Waterside-landing beneath the walls of Portchester Castle. Most of the traffic used the steamboats or skiffs. The 'wadeway' was used for vehicular traffic. These arrangements pro-



vided a novel and delightful way to travel to and from school for the children of the three families who lived on Western Horsea.[24]

In principle the officer-in-charge (the torpedo officer) was responsible for the entire island establishment, but from 1909 onwards the W/T station officer had delegated to him the responsibility for most of the northern side of the range water. Each of the three residences (the farmhouse on Great Horsea being empty after about 1922) had a large area of ground allocated for its use while the caretaker's cottage had three-quarters of an acre adjacent to it. Civilian caretakers and storekeepers were normally long-term resident Admiralty staff. (There were only three from 1888 to 1931). In comparison from 1900 to 1939 there were nineteen naval resident officers-in-charge.

Developments between the wars

Between 1890 and 1918 great improvements had been made in torpedo technology, including the introduction of the 'gyro' and the 18-inch torpedo with considerable increase in ranges and speeds. This increased the need for a longer range than Horsea's 1,100 yards. For some years a

Torpedo Tank House showing catch tubes
Author's Collection

Portsdown Hill in 1924 from Horsea's wooden pier
Author's Collection

stretch of water at Stokes Bay in the Solent had been used for running torpedoes and a pier with cranes for handling torpedoes was already in use there. Horsea handled a diminished quota of torpedoes each year. Given much more equipment and facilities just after the Great War, Stokes Bay torpedo department commenced working under the control of HMS *Vernon* in January 1921, with the new title of 'Stokes Bay Torpedo Experimental Station'.[25] But Horsea was not to be completely deprived of all torpedo work. In April 1922 the torpedo range and all workshops on the island were transferred from the Director of Armament Supply, (under the local control of the Torpedo Engineer Officer, Portsmouth) to the Whitehead Experimental Establishment, HMS *Vernon*. Inevitably a change in policy and in administration was followed by changes on the island itself; much old machinery and plant, most of it over thirty years old and obsolete, was dismantled. Some items were sent to the Stokes Bay torpedo department, but many items were sold on the island by auction,[26] including two Lancashire boilers, Bellis steam compressors, air-tanks, old-type torpedo tubes and frames, and a great quantity of old workshop equipment.

In place of all this a new Diesel air compression unit and reservoirs were installed, with modern tubes in the firing-point, and new workshop facilities. The massive torpedo experimental tank, which had been built in 1915 to stimulate improvements in torpedo submerged firing, was retained and modernised. Torpedo experimental work continued in the range and in the tankhouse. Two ex-Italian naval motor-torpedo boats were driven to Horsea, and for a time they were run in the range during experimental torpedo firing. Submerged torpedo tubes with equipment taken from the German warship *Baden* at Scapa Flow in 1919 were brought to Horsea in 1922 and extensive trials with them followed. On 22 May 1922, Commander John F. Hutchings was appointed 'for experimental duties' to HMS *Dolphin*.[27] A submarine expert of considerable experience, Commander Hutchings was for the next ten years to work on the island conducting experiments in submarine design and control, using models which were scale replicas of ordinary British submarines. The first work by a team of six naval personnel and one civilian, later to be strengthened, was an accurate scale model of the Submarine X.1 carried out under the personal supervision of the Commander. The models were constructed in Portsmouth dockyard, fitted out in HMS *Dolphin*, and then taken to Horsea for operational work and further experiments. Part of the old Victorian torpedo workshops were taken over for this purpose. The models (the first one was over 21 feet long) were conveyed from workshops to range water on specially adapted trolleys which ran on the railway lines. The three-ton cantilever cranes at the firing-point were used for lifting them. Electrically powered, the models were able to manoeuvre on the surface, dive and then re-surface, all movement and speed being controlled from within the model by a pre-programmed unit. Between 1923 and 1932 three models were built for this work. They received the unofficial nicknames of 'Pip', 'Squeak' and 'Wilfred', after a popular animal cartoon series then current in a national daily newspaper. After 1932 this work was transferred from Horsea to the Haslar Experimental Works.

Following Mr. Elwell's construction of the fourth 446 foot wireless mast (completed in November 1921) further modernisation of the high-powered W/T station was undertaken, and by 1924 a red-brick transmitting station was completed, to be known as 'Olympia'. Horsea continued to be used for an increasing number of widely varying experimental and trials tasks. Frequently a task would be carried out by a group of naval men or civilians, the nature of which was quite mysterious and unintelligible to the observer. Prior to 1914 a fine one-fifth scale working model of a fifty foot steam picket boat was constructed in Portsmouth Dockyard. Taken to Horsea it was fitted with equipment so that it could steam up and down the range during extensive experiments with remote control by wireless.

Before the Great War it had not been compulsory for officers and men in the Royal Navy to be able to swim, and consequently during the war many lives were lost. Resulting from a change in naval regulations after 1918 all officers and men were required to be able to swim. To make doubly sure that their ability to swim was not impaired through lack of practice, they were required to re-qualify as swimmers each year. Horsea Island's range water was to be the scene of many of these re-qualifying classes, which took place normally during the warmer months. Two old ninety-six foot long rafts (formerly the torpedo-recovery rafts) were moored in the western end of the range, one along the bank on the south side, the other a little way from the north bank allowing some thirty yards of water between. In attendance was a manned skiff carrying besides its crew, a swimming instructor and a life-belt or two. On each raft would be more Petty Officer swimming instructors. Groups of officers or men, clad in white duck suits (to simulate full clothing) would assemble on the raft nearest the bank, and on an order to do so would dive, jump or just fall into the water and swim to the opposite raft. A rest of some minutes was allowed, the men remaining in the water and merely holding on to ropes secured for the purpose along the raft lengths before swimming back to the other raft.

Another regular feature of the summer scene on Horsea up to 1939 was the annual camp of naval cadets from the

Portsmouth naval establishments. These youngsters, under the care and guidance of serving Petty Officers and other ratings, brought liveliness to the normally quiet meadows of the island. They were always under canvas, usually in Number One meadow, which was south of the range, between the ten-foot 'unclimbable fence' and the base of Ville's mast. The order of the day included swimming, instruction in boat-pulling and sailing and numerous other sports. The ability to infuse a happy mixture of serious instruction with pleasurable pastime was second nature to the naval instructors. On these occasions the island's regular residents, children and adults, took a keen interest and often participated in events.

New ideas in the field of wireless telegraphy required progressive modernisation of the station and its equipment. In 1931 a civilian member of the naval scientific service, Mr. E. N. Lee, became mainly responsible for introducing modern equipment and phasing out the old.[28] Initially this involved the construction of an entirely new type of aerial mast; steel unsupported towers, some 180 feet high and others of 100 feet. Their construction continued throughout 1932 and they came into service early in 1933. The next step was the demolition of the Elwell wooden masts, those graceful giants which for two decades had been the most prominent landmarks in Portsmouth Harbour. It was decided to fell each one in turn in such a way that no part of any mast would fall into the sea. An arrangement of stays, and tackle, resulted in each mast being checked in its fall in such a way that the 446 feet of timber broke in two places, causing the mast to lie at ground level in the form of an 'S'. From the eerie silence that prevailed as each mast first tilted slightly, to the ear-splitting crash as some 100 tons of wood and iron struck the ground was but a moment or two; but in that short time a visible part of the history of Horsea had gone forever. Ville's mast was the first victim, on 29 March 1933, and the northern mast was the last on 5 April. The signifance of the occasion was reflected by the attendance of senior naval officers, including Admiral Sir A. K. Waistell, CinC Portsmouth and Commodore J. F. Somerville. So passed the high-powered world-wide 360° transmission system, to be replaced by medium-powered directional transmission at what was the Navy's foremost W/T station. The new steel aerial towers lacked the grace and beauty of the old Elwell masts. They dominated the north central and eastern sides of the island where a massive 'aerial exchange' had been incorporated, close by the old W/T 'Olympia'. Further modernisation of the station took place after World War Two, during which the majority of the steel aerial towers became obsolete.

Wartime air-raids during 1940–1941 did considerable damage to all the Victorian buildings on Little Horsea; aerial bombardment partially destroyed the torpedo workshops, boilerhouse and stores, boatshed, messhalls, guardroom and firing-point, but the three residences fortunately were unscathed. The remainder was so badly damaged that complete demolition followed. Of the major Victorian buildings only the former messrooms on the north side, and the houses survived. By 1939 routine torpedo-firing in the range had virtually ceased, but in 1941 a motor torpedo boat was brought through the lock gates and torpedo trials with it were carried out for a period. Early in 1942 under the joint direction of Commanders Sladen and Fell, initial training began in the use of submersible two-man chariots. At first a wooden mock-up chariot, nicknamed 'Cassidy' was used; it had no power of its own and was towed up and down Horsea Range by a small motorboat. The first death in that very gallant band of Charioteers occurred in May when Lieutenant P. C. A. Browning, RNVR failed to surface after a routine dive. Later in the summer of 1942, Chariot training was moved to Scotland. During 1943, on a large area of the south eastern corner of Great Horsea concrete slipways with nearby workshops were constructed. During 1944 were repaired and refitted 38 of the landing craft used in the Normandy offensive during and after D-Day. Almost all of the mass of debris at the western section of Horsea caused by the bombing, was made use of during the construction of these slipways.

Since the end of World War Two, Horsea has been used in various ways by the Navy. The W/T station was operational until about 1960. Other activities included the training of divers, fire-fighting training, experiments and trials in under water weapons, and amphibious tank trials by an Army group. Horsea is no longer an island, having lost some 69 acres of the north-eastern semi-marshlands to the Portsmouth Harbour Reclamation scheme along with about half its coastline. Offices and stores now occupy the old Marconi W/T station and the three houses have long since been demolished. For many years the only island residents have been Mr. and Mrs. Brian Chivers who reside in a bungalow (built in the 1930's) near the site of the former Georgian farmhouse. Tarmacadam roads now circumnavigate the island linked to a large car-park. Since 1950, they have been lit at night. The black, gloomy-looking steel structures of the firefighting school dominate the skyline. Of the old Horsea, only the torpedo tank-house of 1915 and the messrooms of 1888 remain, with the solitary five-ton Ransome and Rapier crane. A mass of bushes and small trees abounds, in marked contrast to the flat bareness of the 1890's and the orderliness and open spaces of the 1930's. The long, man-made range survives, with its sides overgrown but there is little to suggest that this was once the site on which naval history was made.

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[16] Priddys Hard Museum. Annual Report of Captain of HMS *Vernon*, 1904.
[17] Priddys Hard Museum. Annual Report of Captain of HMS *Vernon*, 1898,
[18] PRO, F389, ADM.116–523.
[19] Priddys Hard Museum. Annual Report of Captain of HMS *Vernon*, 1908, pp. 9–13.
[20] Priddys Hard Museum. Annual Report of Captain of HMS *Vernon*, 1908, p. 8.
[21] Letter to present writer from Mr. E. N. Lee, 6 June, 1970.
[22] Letter to present writer from Mr. E. N. Lee, 6 June, 1970.
[23] The account of the collision between the aircraft and the wireless mast is based mainly on the recollection of the present writer.
[24] As recalled by present writer.
[25] PRO, Admiralty Fleet Order 2508/21.
[26] Priddys Hard Museum. Annual Report of Captain of HMS *Vernon*, 1922.
[27] Letter to present writer from Lt. David Wadey, MBE, 28 January, 1975.
[28] Letter to present writer from Mr. E. N. Lee, 1975.

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Educated at Chivers Private School, Southsea, he entered the Royal Navy in 1932. In 1945 he became head of a department in the Royal Naval Hospital at Haslar, Gosport. He was awarded the BEM and ISM in 1975, and he retired in 1979 after 47 years unbroken service in the Royal Navy and under the Admiralty.

In addition to his lifelong interest in Horsea Island he is also an authority on the history of Naval Steam Pinnaces, and 'Bullnose' Morris motor cars.

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